

WHAT IS CLAIMED IS:

1. An automatic gain control apparatus, comprising:  
an RF automatic gain controller for controlling gain  
of a radio frequency signal;

a frequency converter for frequency-converting said  
5 radio frequency signal into an intermediate frequency signal;

an IF automatic gain controller for controlling gain  
of said intermediate frequency signal;

a level detector for detecting a signal level of the  
intermediate frequency signal with said gain controlled, and  
10 generating a level signal; and

an automatic gain control signal generator for  
generating, based on said level signal, an RF automatic gain  
control signal for controlling said RF automatic gain controller  
and an IF automatic gain control signal for controlling said IF  
15 automatic gain controller, to separately control the RF automatic  
gain controller and the IF automatic gain controller.

2. The automatic gain control apparatus according to  
claim 1, wherein

if said level signal indicates a level equal to or lower  
than a first predetermined level, said automatic gain control  
5 signal generator fixes the gain of said RF automatic gain  
controller to a maximum value, and changes the gain of said IF

automatic gain controller,

if said level signal indicates a level higher than said first predetermined level and equal to or lower than a second predetermined level, said automatic gain control signal generator  
10 fixes the gain of said IF automatic gain controller to the first predetermined value, and changes the gain of said RF automatic gain controller, and

if said level signal indicates a level higher than said  
15 second predetermined level, said automatic gain control signal generator fixes the gain of said RF automatic gain controller to a second predetermined value, and changes the gain of said IF automatic gain controller.

3. The automatic gain control apparatus according to claim 1, wherein

if said level signal indicates a level equal to or lower than a third predetermined level, said automatic gain control  
5 signal generator fixes the gain of said RF automatic gain controller to a maximum value,

if said level signal indicates a level higher than said third predetermined level and equal to or lower than a fourth predetermined level, the automatic gain control signal generator  
10 changes the gain of said RF automatic gain controller,

if said level signal indicates a level higher than said fourth predetermined level, the automatic gain control signal

generator fixes the gain of said RF automatic gain controller to a third predetermined value,

15           if said level signal indicates a level equal to or lower than a fifth predetermined level, the automatic gain control signal generator changes the gain of said IF automatic gain controller,

20           if said level signal indicates a level higher than said fifth predetermined level and equal to or lower than a sixth predetermined level, the automatic gain control signal generator fixes the gain of said IF automatic gain controller to a fourth predetermined value, and

25           if said level signal indicates a level higher than said sixth predetermined level, the automatic gain control signal generator changes the gain of said IF automatic gain controller.

4. The automatic gain control apparatus according to claim 2, further comprising:

5           a microcomputer for setting the first and second predetermined levels at which the gain of said RF automatic gain controller and the gain of said IF automatic gain controller is changed or fixed, a parameter indicating a gradient of the radio frequency signal to the RF automatic gain control signal while the gain of said RF automatic gain controller is changed, and a parameter indicating a gradient of the radio frequency signal to the IF automatic gain control signal while the gain of said IF

10

automatic gain controller is changed.

5. The automatic gain control apparatus according to claim 3, further comprising:

a microcomputer for setting the third and fourth predetermined levels at which the gain of said RF automatic gain controller is changed or fixed according to said radio frequency signal, the fifth and sixth predetermined levels at which the gain of said IF automatic gain controller is changed or fixed according to said radio frequency signal, a parameter indicating a gradient of the radio frequency signal to the RF automatic gain control signal while the gain of said RF automatic gain controller is changed, and a parameter indicating a gradient of the radio frequency signal to the IF automatic gain control signal while the gain of said IF automatic gain controller is changed.